58th Annual Symposium of the International Association for Vegetation Science:

Understanding broad-scale vegetation patterns

19 – 24 July 2015, Brno, Czech Republic

Abstracts

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Edited by
Milan Chytrý, David Zelený & Eva Hettenbergerová

Masaryk University, Brno, 2015

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Dedicated to the memory of J. Bastow Wilson (1944–2015)

Rocchini D.

Oral presentation

Uncertainty surfaces and maps of ignorance: the possibility of spatially estimating dark diversity

Special session: The relevance of “dark diversity” for theoretical and applied ecology

Duccio Rocchini [1,*], Matteo Marcantonio [1], Giles M. Foody [2], Carol X. Garzon-Lopez [1], Kate S. He [3], Ingolf Kühn [4], Markus Metz [1], Markus Neteler [1], Woody Turner [5] & Joaquin Hortal [6]

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In ecology, a number of studies have dealt with the prediction of species diversity over space and its changes over time based on a set of predictors related to environmental variability, productivity, spatial constraints, and climate drivers. However, the observed diversity is a portion of the species pool which is strictly related to abiotic conditions and evolutionary history of species in the pool. In this study we aim to explicitly show uncertainty of the prediction of species distribution at a global scale. This is in line with the “dark diversity” concept extended to a global spatial scale. We will not deal with problems in the detectability of species but with hidden patterns in the probability of their distribution. Thus far, species distribution estimates based on field data sampling do not represent reality in a deterministic sense and are only estimates of potential presence. Therefore, the use of “maps of ignorance” representing the bias or the uncertainty deriving from species distribution modeling, along with predictive maps, is strongly encouraged. Uncertainty can derive from a number of input data sources, such as the definition or identification of a certain species, as well as location-based errors. The spatial distribution of uncertainty should explicitly be shown on maps to avoid ignoring overall accuracy or model errors. We propose methods mainly based on Bayesian logistic regression coupled with simulation-based Monte Carlo techniques and Cartograms applied to European and worldwide datasets for explicitly mapping uncertainty in the distribution of species in a Free and Open Source environment.

Rodríguez-Rojo M.P.

Oral presentation

Vegetation classification of the lowland hay meadows and mesic pastures in Western and Central Europe

Maria Pilar Rodríguez-Rojo [1,*], Borja Jiménez-Alfaro [2], Ute Jandt [3,4], Helge Bruelheide [3,4], Philip Perrin [5], Zygmunt Kącki [6], Federico Fernández-González [1] & Milan Chytrý [2]

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European phytosociological classifications have always conceived the separation of the traditional lowland hay meadows from the mesic pastures with the description of the following alliances: *Arrhenatherion* and *Brachypodio rupestris-Centaureion nemoralis* for the hay meadows (mown once or two times a year), and *Cynosurion* for grazed mesic grasslands. However, management practices are often not clearly differentiated in the field or are subject to change over time. There are also ongoing debates among authors about the position of some associations, especially concerning the delimitation of *Arrhenatherion* meadows versus *Cynosurion* pastures. Therefore, a syntaxonomical revision is needed on a continental scale. The aims of this study is to establish the vegetation types of lowland hay meadows and pastures in Atlantic and Central Europe, and to describe their floristic composition and their correlation with geography and environmental factors. We compiled a vegetation database with *Arrhenatherion*, *Brachypodio-Centaureion nemoralis* and *Cynosurion* grasslands as assigned by the original authors. Data are from eleven countries (Austria, Belgium, Czech Republic, France, Germany, Ireland, the Netherlands, Poland, Spain, Switzerland, United Kingdom) covering the territories of Atlantic and Central Europe (Alps and Carpathians were excluded). 36 phytosociological associations were analyzed using semi-supervised k-means classification (with fixed centroids) on a geographically stratified dataset of 7583 relevés. The relevés classified into the established vegetation types were submitted to a detrended correspondence analysis (DCA). Results indicated that four main vegetation groups can be defined: (1) Atlantic and Submediterranean hay meadows and pastures; (2) Continental meso-hygrophilous hay meadows; (3) Continental and Pyrenean mesic and meso-xeric meadows; (4) Intensive hay meadows and mesic pastures. Soil trophic status and water content was the strongest driver of the variation in the floristic composition, followed by biogeographic factors. The definition of the European habitat 6510 (lowland hay meadows) is evaluated based on these results.